

REMARKS

35 USC Section 103 Rejections:

Claims 1-5, 8, and 13-17 were rejected as being unpatentable under 35 USC 103(a) over Oku et al. (U.S. Patent No. 5,882,808) in view of Deith (WO 91/08179).

The Examiner submits that Oku et al. teaches applying an antimicrobial agent to a substrate by providing a ceramic substrate, providing a conventional silica-based glaze containing an antimicrobial agent (silver oxide, silver-containing ion exchange compound), applying the glaze to the substrate and heating to form a finished coating on the substrate (Col. 1, line 50; Col. 2, line 18; Col. 3, lines 3-32; Example 1). Oku et al. does not teach applying the microbial agent with a sol-gel. (Paper #5)

The Examiner submits that Deith teaches applying a silica-based glaze to a ceramic substrate by a sol-gel method, as an alternative to a conventional, high temperature firing glaze, where the glaze is formed providing a sol-gel precursor formulation comprising a host precursor component (TEOS), allowing the formulation to form a sol-gel (which reads on the compounding step), applying the sol-gel to the substrate and heating to temperatures below 800 degrees C to form a finished coating on the substrate (page 3, lines 12-34; Example). (Paper #5)

The Examiner believes it would have been an obvious modification for one skilled in the art to apply the glaze of Oku et al. by the sol-gel method of Deith, where antimicrobial agent is merely added to the sol-gel glaze composition, with the expectation of gaining the additional benefit of providing the desired ceramic glaze layer in Oku et al. at lower heat treating

temperatures than with the conventional glaze of Oku et al., as taught by Deith. However, Oku et al. and Deith do not teach the log kill rate for *Klebsiella pneumoniae*. (Paper #5)

Applicants respectfully submit that this rejection fails to establish a prima facie showing of obviousness, since the combination of references fails to disclose expressly claimed elements or limitations of Applicants' invention. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants respectfully submit that Oku et al. do not teach or suggest a method of producing an antimicrobial hard surface substrate comprising the steps of: (a) providing a hard surface substrate, (b) providing a sol-gel precursor formulation comprising a host precursor component and at least one metal-containing antimicrobial agent selected from the group consisting of metal-containing ion-exchange compounds, metal-containing zeolites, metal-containing glasses, and any mixtures thereof, (c) compounding said sol-gel film precursor formulation to produce an adhesive sol-gel coating composition, (d) applying said sol-gel coating composition to at least a portion of said hard surface substrate, and (e) exposing said sol-gel coated hard surface substrate to a temperature of at most about 800 degrees C to form a finished sol-gel film-coated hard surface substrate, wherein said finished substrate exhibits a log kill rate for *Klebsiella pneumoniae* of at least 0.5 as measured under a modified plate contact method, and wherein said contact method is JIS Z2801:2000 utilizing a phosphate buffer solution.

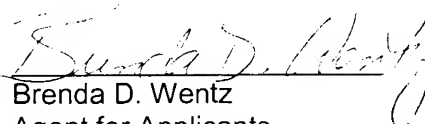
Applicants further contend that Deith does not overcome the deficiencies of Oku et al., as described above in reference to previously amended independent claim 1, or teach or suggest the method as described above in reference to previously amended independent claim 1.

Therefore, since the combination of references fails to disclose expressly claimed elements or limitations of Applicants' invention, Applicants respectfully submit that a prima facie showing of obviousness has not been established. As such, Applicants respectfully submit that this rejection is improper and, since claims 2-5, 8, and 13-17 depend from claim 1, request that the rejection of claims 1-5, 8, and 13-17 be withdrawn.

In view of the above remarks, reconsideration of pending claims 1-5, 8, and 13-17 is earnestly solicited.

Respectfully requested,

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